

WHAT IS CLAIMED IS:

1. A method for producing fullerenes, comprising:

a first process of imperfectly combusting or thermally decomposing a hydrocarbon fuel in a reactor, thereby producing a high-temperature gas flow containing fullerenes and soot;

a second process of introducing the high-temperature gas flow containing the fullerenes and the soot from said reactor into a first filter including a heat-resistant filtering element, to allow the fullerenes in a gaseous state to flow through said first filter, thereby collecting the soot from the gas flow in said first filter; and

a third process of lowering a temperature of the gas flow having just flowed through said first filter, in order to solidify the fullerenes, thereby collecting and separating the fullerenes from the gas flow.

2. A method for producing fullerenes as defined in claim 1, wherein the high-temperature gas flow containing the fullerenes and the soot at an entrance of said first filter has a temperature falling within a range of more than 600 to 900 °C.

3. A method for producing fullerenes as defined in claim 2, wherein the gas flow after having flowed through said first filter has a temperature controlled within a range at which polycyclic aromatic compounds contained in the gas flow are held in a gaseous state; and

wherein the fullerenes free of the polycyclic aromatic compounds are collected using a second filter.

4. A method for producing fullerenes as defined in claim 3, wherein the controlled temperature of the gas flow ranges from 300 to 600 °C.

5. A method for producing fullerenes as defined in claim 2, wherein the gas flow after having flowed through said first filter is cooled down to a temperature of 200 °C or less, thereby collecting the solidified fullerenes from the gas flow using a second filter.

6. A method for producing fullerenes as defined in claim 1, wherein said reactor is provided with an exhaust port at a lower portion of said reactor, through which the high-temperature gas flow containing the fullerenes and the soot is discharged to outside of said reactor.

7. A method for producing fullerenes as defined in claim 6, wherein said reactor is provided with a burner at an upper portion of said reactor for imperfectly combusting or thermally decomposing the hydrocarbon fuel.